

REMARKS

Applicants appreciate the Examiner's thorough review of the present application, and respectfully request reconsideration in light of the preceding amendments and the following remarks.

Claims 1-21 and 27-28 are pending in the application. Claims 22-25 have been previously cancelled. Claim 26 is further cancelled by this Amendment, without prejudice or disclaimer. Claims 1, 9 and 13-14 have been amended to better define the claimed invention. New claims 27-28, which are readable on the elected invention/species and include previously presented limitations of claims 1 and 26, have been added to provide Applicants with the scope of protection to which they are believed entitled. The amended/new claims find solid support in the original specification and drawings, especially FIGs. 1A, 1C, and paragraphs 0041, 0209. No new matter has been introduced through the foregoing amendments.

The new rejections relying on *Vassallo* and *Honda* are noted. Basically, the Office proposes to replace the DC motor in FIG. 3C of *Vassallo* with the *Honda* piezoelectric motor to allegedly arrive at the claimed invention. Applicants respectfully submit that even assuming *arguendo* that the references were properly combinable (which Applicants contend to the contrary), the combined device would still lack the following features of the claimed invention.

As to independent **claim 1**, the applied references, if properly combinable, would fail to teach or suggest that “the rotor is pressed onto the stator with a pressing force that is changed directly by changing the force with which the user presses the cap onto the base so that strong haptic feedback is obtained when the cap is pressed by the user with a strong force and weak haptic feedback is obtained when the cap is pressed by the user with a weak force.” As discussed above, the claim feature finds support in at least paragraphs 0041 and 0209 of the original specification. Advantages of embodiments implementing the claimed invention include, but are not limited to, a

wide range of haptic feedback and/or reduction in power consumption. None of the applied references appear to teach or suggest the claim feature and/or achieve the disclosed advantages.

Vassallo appears to disclose that haptic feedback can be provided in a number of directions, including a push-pull direction. *See Vassallo* at column 18 lines 54-58. The feedback force in *Vassallo* is calculated by a microprocessor 302 based on sensor signals. *See Vassallo* at the paragraph bridging columns 17-18. However, the reference does not teach or suggest that strong or weak haptic feedback is obtained when the cap is pressed by the user with a respectively strong or weak force. Indeed, the push-pull operation of the knob/button in *Vassallo* is used to select or switch modes of the device, rather than to control whether the haptic feedback should be strong or weak. *See Vassallo* at, e.g., column 17 lines 36-47 as well as column 6, lines 10-20, 24-26 and 33-34. The *Honda* reference is relied on only for the piezoelectric motor and does not seem to be able to cure the deficiency of *Vassallo*.

Accordingly, Applicants respectfully submit that the applied references singly or in combination fail to teach or suggest the now claimed invention of independent claim 1.

The dependent claims, including any new claim(s), are considered patentable at least for the reason(s) advanced with respect to the respective independent claim(s).

As to **claim 6**, the Office is currently relying on the bearing within the *Vassallo* DC motor for the claimed bearing mechanism. Applicants respectfully disagree with this erroneous position, because when the *Vassallo* DC motor was replaced with the *Honda* piezoelectric motor as proposed by the USPTO in the rejection of claim 1, there would be no bearing left in the combined device. Accordingly, Applicants respectfully submit that claim 6 is separately patentable over the applied references.

As to **claim 8**, the Office is of the opinion that *Honda* teaches at column 1 lines 8-30 the claim feature that “the rotational state detecting device detects the rotational state of the

piezoelectric motor by analyzing a current flowing through the piezoelectric motor." Applicants respectfully disagree, because the cited section of *Honda*, reproduced herein below for the Examiner's convenience of review, does not teach such.

In a known ultrasonic motor using a piezoelectric vibrator, two groups of electrodes are attached to one side of a ring type piezoelectric ceramic, the two groups of electrodes are so positioned that standing waves respectively generated by the two groups of electrodes are shifted every $\pi/2$ in each position. The parts of the ring type piezoelectric vibrator corresponding to the electrode are alternately polarized in reverse. Also, the two groups of the electrodes are respectively connected to two oscillators for respectively generating alternating currents having $\pi/2$ phase shift each other. When the alternating currents from the two oscillators are respectively applied to the two groups of electrodes, the two standing waves having a $\pi/2$ phase shift to each other generated on the surfaces of the ring type piezoelectric vibrator and then progressive waves owing to a compound of the two standing waves generate on the surfaces of the ring type piezoelectric vibrator. Therefore, when a rotary member is put on the ring type piezoelectric vibrator and the rotary member is strongly pressed to the ring type piezoelectric vibrator, the rotary member is rotated by the progressive waves.

Apparently, the cited passage of *Honda* only discloses a general operation of a piezoelectric motor as a driver when a voltage or current is applied thereto. The cited passage does not teach or suggest to analyze the current in order to detect the rotational state of the piezoelectric motor as presently claimed.

The Examiner's official notice is noted, and respectfully traversed as being evidentially unsupported. The Office is kindly requested to either cite references that support the allegation that the claim features were known in the art *prior to the present invention*, or to withdraw the official notice.¹

Finally, it should be noted that the claimed piezoelectric motor in claim 8 is configured to function as both an actuator/driver and a sensor. Indeed, a person of ordinary skill in the art would understand that when a user rotates the cap (and hence the rotor) relative to the base (and hence the

¹ See MPEP, section 2144.03 (As noted by the court in *In re Ahlert*, 424 F.2d 1088, 1091, 165 USPQ 418, 420 (CCPA 1970), the notice of facts beyond the record which may be taken by the examiner must be "capable of such instant and

stator) a current will be generated by the piezoelectric motor in response to such rotation by the user. The current is detected and analyzed by the claimed rotational state detecting device to determine a rotational state of the motor as caused by the user. The claimed piezoelectric motor therefore provides both the sensing current (indicative of the rotational state of the cap/rotor caused by the user) and haptic feedback. In contrast, the DC motor of *Vassallo* is configured only to provide haptic feedback, and hence, the piezoelectric motor imported from *Honda* would still perform the haptic feedback function only. There would be no suggestion or motivation to further modify the *Honda* piezoelectric motor to provide a sensing current as recited in claim 8.

Accordingly, Applicants respectfully submit that claim 8 is separately patentable over the applied references.

As to **claim 9**, the Examiner's official notice(s) is/are noted, and respectfully traversed as being evidentially unsupported. The Office is kindly requested to either cite references that support the allegation that the claim features were known in the art *prior to the present invention*, or to withdraw the official notice(s).²

In addition, Applicants respectfully submit that the allegedly well known structures cited in the official notice(s), i.e., ring-shaped controls for car audios, include at best only ring-shaped *rotors*. There is no evidence that ring-shaped *stators and bases* were also known in the art. The ring shape of the haptic feedback device resulting from all relevant components, including the cap, the rotor, the stator and the base, being annular in shape is neither disclosed, taught nor suggested by the applied art of record.

Accordingly, Applicants respectfully submit that claim 9 is separately patentable over the applied references.

² unquestionable demonstration as to defy dispute") (emphasis added).

As to **claim 14**, the applied references do not fairly teach or suggest the claimed “control unit for controlling the piezoelectric motor, when the user has rotated the cap, so that the rotor moves in a direction away from the stator to reduce a pressure of the rotor on the stator.” The claim feature find support in at least paragraph 0065 of the original specification. An advantage of embodiment implementing the claim feature has also been detailed in the same paragraph.

The Office’s interpretation of *Vassallo*’s “detents” as being readable on the claim feature is traversed, because the reference’s teaching is non-enabling as to how detents can be achieved. *Honda* also fails to cure the deficiency of *Vassallo*. In the absence of (i) an explicit teaching that it was known to move the rotor away from the stator to reduce the pressure therebetween, and/or (ii) a clear articulation of the reason(s) why³ a person of ordinary skill in the art would have arranged the prior art device in the claimed manner, Applicants respectfully submit that the invention of claim 14 would not have been obvious over the art as applied in the Final Office Action.

Accordingly, Applicants respectfully submit that claim 14 is separately patentable over the applied references.

³ Rejections on obviousness cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *KSR International Co. v. Teleflex Inc.*, 550 U.S. at ___, 82 USPQ2d at 1396.

Conclusion

Each of the rejections has been traversed/overcome. Accordingly, Applicants respectfully submit that all claims are now in condition for allowance. Early and favorable indication of allowance is courteously solicited.

The Examiner is invited to telephone the undersigned, Applicant's attorney of record, to facilitate advancement of the present application.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 07-1337 and please credit any excess fees to such deposit account.

Respectfully submitted,

LOWE HAUPTMAN HAM & BERNER, LLP

Benjamin J. Hauptman
Registration No. 29,310

USPTO Customer No. 22429
1700 Diagonal Road, Suite 300
Alexandria, VA 22314
(703) 684-1111
(703) 518-5499 Facsimile
Date: December 31, 2008
BIH/KL/bjs